

### **REMARKS**

Applicant has carefully reviewed and considered the Final Office Action mailed on October 18, 2007, and the references cited therewith.

Claims 1, 8, 12-13, 18-20, and 23-26 are amended, claim 6 was previously cancelled, no claims are added, and claims 30-54 were previously withdrawn; as a result, claims 1-5, and 7-54 are now pending in this application.

Applicant respectfully submits that the amendments to claims 1, 8, 12-13, 18-20, and 23-26 do not introduce any new subject matter and support for the amendments can be found in Applicant's Specification at page 5, line 22 thru page 6, line 25, among other places.

#### **Request to Remove Final Status**

Applicant respectfully requests Examiner remove the finality of the Office Action mailed October 18, 2007. Applicant respectfully submits that the new application is a continuing application of an earlier application and all claims of the new application are not drawn to the same invention claimed in the earlier application, and would not have been properly finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application.

#### **§ 102 Rejection of the Claims**

Claims 1, 3-5, 8-10, 12-14, 16 and 20 were rejected under 35 USC § 102(b) as being anticipated by U.S. Patent No. 6,180,239 to Whitesides et al. (hereinafter "Whitesides"). Applicant has amended claims 1, 8, 12-13, 18-20, and 23-26, insofar as the rejection applies to the claims as amended, Applicant respectfully traverses the rejection as follows.

Applicant respectfully submits that Whitesides does not describe all the elements recited in claim 1 and claim 23 as amended. For example, Whitesides does not appear to describe preparing organic molecules having head groups and tail groups, applying the organic molecules to an aligning surface consisting of a planar surface, allowing the organic molecules to self assemble, where the head groups pair with other head groups

and the tail groups pair with other tail groups to form parallel rows in a plane parallel with the planar surface of the aligning surface, contacting the aligning surface having the self assembled organic molecules with a substrate surface, where one end of each organic molecule becomes an anchor end attracted to the substrate surface and a portion beyond the anchor end is attracted to the aligning surface, and separating the aligning surface from the substrate surface, where the portion beyond the anchor end transitions to extend generally along a direction that is perpendicular to the substrate surface and the anchor end is anchored to the substrate surface to create a space between each pair of anchor ends, as provided in claims 1 and 23, as amended.

In the recent Office Action, it was asserted that,

Whitesides et al. teach a method creating a patterned feature on a substrate comprising preparing a solution of organic molecules having self-assembling properties (27), applying the solution to an aligning surface (20) consisting of edges defining a perimeter, where a planar surface with two-dimensional cross-section extends between the edges, allowing the organic molecules to form an ordered pattern on the aligning surface; (reads broadly on conformal coating shown) contacting the aligning surface with the substrate (30), and separating the aligning surface from the substrate, (Figure 1d) leaving patterns of the organic molecules on the substrate.

(Final Office Action, Page 3).

However, Whitesides appears to describe applying a self-assembling species 27 to a stamp surface 26, and contacting the stamp surface 26 to a surface 28 of an article 30. (See Figures 1a-1b). As shown in Figures 1a-1b, the stamp surface 26 appears to have a surface with a number of projections. Whitesides appears to describe allowing the stamping surface 26 to remain in contact with surface 28 for a period of time sufficient to allow molecular species 27 to spread from portion 34 of surface 28 onto portion 36 of surface 28. (See Figure 1c). Species 27 is thus allowed to spread across surface 28 to form an increasingly narrow gap 38 (Figure 1d) on surface 28. The result of the method taught in Whitesides is shown in Figures 1d and 1e. As can be seen, it appears that species 27 is coated onto portions of the surface 28, and the gap 38 is defined by adjacent

regions of self-assembled monolayer 27 formed by contacting the stamp surface 26 to the surface 28. From this, it appears that the regions of self-assembled monolayer 27 formed by contacting the stamp surface 26 to the surface 28 are dependent on the configuration of the stamp surface 26.

Whitesides does not appear to describe the self-assembling species forming the pattern in and of itself without the stamping surface 26. Rather, the species 27 appears to be coated onto the stamping surface 26 and when contacted with surface 28, the species 27 appears to spread out uniformly, where the gap is formed by adjacent regions of the monolayer 27. The stamping pattern appears to allow Whitesides to form the "well-defined, very closely-spaced regions of species 27 on surface 28." (Col. 8, lines 39-41). However, Whitesides does not appear to teach allowing the organic molecules to self assemble, where the head groups pair with other head groups and the tail groups pair with other tail groups to form parallel rows in a plane parallel with the planar surface of the aligning surface, contacting the aligning surface having the self assembled organic molecules with a substrate surface, where one end of each organic molecule becomes an anchor end attracted to the substrate surface and a portion beyond the anchor end is attracted to the aligning surface, and separating the aligning surface from the substrate surface, where the portion beyond the anchor end transitions to extend generally along a direction that is perpendicular to the substrate surface and the anchor end is anchored to the substrate surface to create a space between each pair of anchor ends, as provided in claims 1 and 23, as amended.

Instead, Whitesides appears to teach that the stamp 20 is maintained in contact with article 30 for a period of time sufficient to allow species 27 to spread over surface 28 to a desired extent, thus the species 27 spreads from each portion of stamping surface 26 towards an adjacent portion (Col. 8, lines 22-30). In addition, it appears that the species 27 would not form an ordered pattern on the surface 28 if the stamping surface 26 did not have the indentations 24 and projections formed thereon.

Based on the forgoing, Applicant respectfully submits that Whitesides does not contain each and every element and limitation of independent claims 1 and 23, as amended. As such, Applicant respectfully submits that Whitesides does not support a 102(b) rejection of claims 1 and 23. Applicant respectfully requests reconsideration and withdrawal of the 102(b) rejection for independent claims 1 and 23, as well as those claims which depend therefrom.

Claims 1, 3-5, 8, 9, 12, 14, 16, 20 and 23-26 were rejected under 35 USC § 102(b) as being anticipated by U.S. Publication No. 2003/0024632 to Hahn et al. (hereinafter "Hahn"). Applicant has amended claims 1, 8, 12-13, 18-20, and 23-26, insofar as the rejection applies to the claims as amended, Applicant respectfully traverses the rejection as follows.

Applicant respectfully submits Hahn does not describe all the elements recited in claim 1 and claim 23 as amended. For example, Hahn does not appear to describe preparing organic molecules having head groups and tail groups, applying the organic molecules to an aligning surface consisting of a planar surface, allowing the organic molecules to self assemble, where the head groups pair with other head groups and the tail groups pair with other tail groups to form parallel rows in a plane parallel with the planar surface of the aligning surface, contacting the aligning surface having the self assembled organic molecules with a substrate surface, where one end of each organic molecule becomes an anchor end attracted to the substrate surface and a portion beyond the anchor end is attracted to the aligning surface, and separating the aligning surface from the substrate surface, where the portion beyond the anchor end transitions to extend generally along a direction that is perpendicular to the substrate surface and the anchor end is anchored to the substrate surface to create a space between each pair of anchor ends, as provided in claims 1 and 23, as amended.

Hahn appears to describe transferring a metal micropattern formed on an inorganic substrate to the surface of a plastic substrate where at least one of the surfaces of the metal pattern and the plastic substrate is rendered chemically reactive by prior

surface treatment. (Page 1, para. [0020]). In addition, Hahn appears to describe a plastic plate with a physical surface treatment by corona discharge oxidation and a chemical surface treatment of a metal pattern formed on a glass plate with 3-mercaptopropyltrimethoxysilane (3-MPTMS). (See Figure 2). Hahn appears to then describe that the 3-MPTMS is used as a chemical glue, in that thiol functional groups of 3-MPTMS are self-assembled on the gold surface, while trimethoxysilane functional groups of 3-MPTMS are bound covalently with the oxidized plastic surface. (Page 2, para. [0034]). After the surface treatments, Hahn appears to describe that metal micro-patterns are transferred from a glass substrate to a plastic by bringing the metal micro-patterns on glass substrate in direct contact with the oxidized plastic substrate. (Page 2, para. [0034]). In addition, in Example 1, Hahn appears to describe that the metal pattern is formed on the inorganic substrate by thermal vapour deposition and UV irradiation through a photomask with the given pattern. (Page 3, para. [0040]).

From this, Hahn appears to describe that the self-assembling species is formed on the metal pattern formed on the inorganic substrate. However, Hahn does not appear to describe preparing organic molecules having head groups and tail groups, applying the organic molecules to an aligning surface consisting of a planar surface, allowing the organic molecules to self assemble, where the head groups pair with other head groups and the tail groups pair with other tail groups to form parallel rows in a plane parallel with the planar surface of the aligning surface, contacting the aligning surface having the self assembled organic molecules with a substrate surface, where one end of each organic molecule becomes an anchor end attracted to the substrate surface and a portion beyond the anchor end is attracted to the aligning surface, and separating the aligning surface from the substrate surface, where the portion beyond the anchor end transitions to extend generally along a direction that is perpendicular to the substrate surface and the anchor end is anchored to the substrate surface to create a space between each pair of anchor ends, as provided in claims 1 and 23, as provided in independent claims 1 and 23 as amended,. Rather, Hahn appears to teach making the metal pattern chemically reactive with a chemical surface treatment of the metal pattern.

Based on the forgoing, Applicant respectfully submits that Hahn does not contain each and every element and limitation of independent claims 1 and 23, as amended. As such, Applicant respectfully submits that Hahn does not support a 102(b) rejection of claims 1 and 23. Applicant respectfully requests reconsideration and withdrawal of the 102(b) rejection for independent claims 1 and 23, as well as those claims which depend therefrom.

§ 103 Rejection of the Claims

Claims 11 and 15 were rejected under 35 USC § 103(a) as being unpatentable over Whitesides in view of U.S. Patent No. 6,562,398 to Braach-Maksvytis, et al. (hereinafter "Braach-Maksvytis").

Claims 17-19 were rejected under 35 USC § 103(a) as being unpatentable over Whitesides in view of U.S. Patent No. 5,578,351 to Shashidhar et al. (hereinafter "Shashidhar").

Claim 21 was rejected under 35 USC § 103(a) as being unpatentable over Whitesides in view of U.S. Patent No. 6,465,054 to Effenberger (hereinafter "Effenberger").

Claims 10, 11, 15 and 22 were rejected under 35 USC § 103(a) as being unpatentable over Hahn in view of Braach-Maksvytis.

Claims 17-19 were rejected under 35 USC § 103(a) as being unpatentable over Hahn in view of Shashidhar.

Claims 21 and 29 were rejected under 35 USC § 103(a) as being unpatentable over Hahn in view of Effenberger.

Applicant has amended claims 1, 8, 12-13, 18-20, and 23-26, insofar as the rejection applies to the claims as amended, Applicant respectfully traverses the rejection as follows.

Claims 10, 11, 15, 17-19, and 21, and 22 depend from independent claim 1 and claim 29 depends from independent claim 23, which are in condition for allowance over

Whitesides and Hahn for at least the reasons stated above. That is, Whitesides and Hahn do not describe, teach, or suggest each and every element contained in Applicant's independent claims 1 and 23.

From Applicant's review, Braach-Maksvytis, Shashidhar, and Effenberger do not cure the deficiencies of Whitesides and Hahn. For example, Braach-Maksvytis, Shashidhar, and Effenberger do not describe, teach, or suggest, independently or in combination with either Whitesides or Hahn, preparing organic molecules having head groups and tail groups, applying the organic molecules to an aligning surface consisting of a planar surface, allowing the organic molecules to self assemble, where the head groups pair with other head groups and the tail groups pair with other tail groups to form parallel rows in a plane parallel with the planar surface of the aligning surface, contacting the aligning surface having the self assembled organic molecules with a substrate surface, where one end of each organic molecule becomes an anchor end attracted to the substrate surface and a portion beyond the anchor end is attracted to the aligning surface, and separating the aligning surface from the substrate surface, where the portion beyond the anchor end transitions to extend generally along a direction that is perpendicular to the substrate surface and the anchor end is anchored to the substrate surface to create a space between each pair of anchor ends, as provided in claims 1 and 23, as amended.

As such, Applicant respectfully submits that each and every element and limitation of independent claims 1 and 23 as amended are not taught or suggested by Braach-Maksvytis and Whitesides, Shashidhar and Whitesides, Effenberger and Whitesides, Braach-Maksvytis and Hahn, Shashidhar and Hahn, and Effenberger and Hahn, either individually or in combination. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the 103(a) rejection of dependent claims 10, 11, 15, 17-19, 21, 22, and 29.

*Allowable Subject Matter*

Claims 2 and 7 were objected to as being dependent upon a rejected base claims, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant thanks the Examiner for noting allowable subject matter in claims 2 and 7.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney Thi Dang at (858) 655 8519.

At any time during the pendency of this application, please charge any additional fees or credit overpayment to the Deposit Account No. 08-2025.

**CERTIFICATE UNDER 37 CFR §1.8:** The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS AF Commissioner for Patents, P.O. BOX 1450 Alexandria, VA 22313-1450, on this 7<sup>th</sup> day of December, 2007.

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